

Book Review

IN SITU HYBRIDIZATION PROTOCOLS.

K.H.A. Choo, ed. Totowa, New Jersey: Humana Press, 1994.

This book is number 33 in the series *Methods in Molecular Biology*. The purpose of the book is clearly expressed in the Preface by the Editor. "The aim of In Situ Hybridization Protocols then is to bring together a wide range of detailed laboratory protocols covering different areas of the in situ hybridization technique in order to assist such workers in rapidly advancing toward this goal."

For this, the book compiles present knowledge on the subject written by leading authors from 9 different countries. Each author is him/herself senior authority if not the original designer of the method.

The book is divided into two parts. Part I is dedicated to Protocols, and include in successive chapters the following challenging subjects: preparation of human chromosomal painting probes from somatic cell hybrids; fluorescent in situ hybridization using chromosome-specific DNA libraries; reverse chromosome painting; FISH detection on DAPI-banded chromosomes; generation of alphoid DNA probes for fluorescent in situ hybridization (FISH) using the polymerase chain reaction; in situ hybridization using synthetic oligomers as probes for centromere and telomere repeats; mapping human YAC clones by fluorescence in situ hybridization using Alu-PCR from single yeast colonies; FISH and Alu-PCR-amplified YAC clones and applications in tumor cytogenetics; primed in situ (PRINS) labeling of DNA; free chromatin mapping by FISH; use of DNA-halo preparations for high-resolution DNA in situ hybridization; in situ hybridization of meiotic prophase chromosomes; strand-specific fluorescence in situ hybridization for determining orientation and direction of DNA sequences; radioactive in situ hybridization to replication-banded chromosomes; gene mapping using 3H-labeled heterologous probes; Dual-label fluorescence in situ hybridization detection of individual chromosomes in sperm; in situ hybridization to *Drosophila* polytene chromosomes; in situ hybridization to polytene chromosomes of *Drosophila melanogaster* and other Dipteran species; microsurgical isolation of native polytene chromosomes of *Drosophila melanogaster* for in situ molecular observa-

tion; PCR in situ hybridization; detection of virus nucleic acids by radioactive and nonisotopic in situ hybridization; sensitive immunocytochemical detection of viral genomes; primer in situ (PRINS) labeling of RNA; hybridization histochemistry using radiolabeled oligodeoxynucleotide probes; mRNA in situ hybridization to in vitro cultured cells; quantitative in situ hybridization using radioactive probes in the study of gene expression in heterocellular systems; tissue distribution of gene expression in mammalian development; and subcellular location of mRNA by electron microscope hybridization histochemistry.

Each chapter contains an introduction to the subject, a detailed step by step description of the method, notes covering the problems and pitfalls which may arise while performing the technique, suggestions about the materials and equipment needed, and numerous references.

Part II includes 5 reviews: principle of digital imaging microscopy; application of in situ hybridization for the detection of virus nucleic acids; positional cloning and multicolor in situ hybridization; principles and protocols; characterization of constitutive marker chromosomes in humans; and detection of chromosomal aberrations in interphase and metaphase cells in prenatal and postnatal studies. The reader will find these chapters as illustrative as those of Part I.

All chapters are well illustrated and 8 color plates located in the central part of the book enhance its usefulness.

Although not all chapters will be equally useful for every reader, most will find their question about troubleshooting and alternative procedures answered. The beginner will get first hand information not readily found in standard journals.

I find Choo's in situ hybridization protocols a gem that will occupy a prominent place in modern laboratories of genetics and pathology. It is a particular merit of the editor to have been able to compile all of these protocols into one volume.

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